

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments filed 3/24/10 have been fully considered but they are not persuasive. The Rudolph reference still applies.
2. The most important point to note about the current rejection, and the Applicant's arguments, is that something which is old does not become patentable upon the discovery of a new property (See MPEP 2112 I). The Randolph reference, as used to reject the claims in each of the previous office actions, discloses the entirety of the positively recited process steps. What Randolph does not explicitly disclose is the comparison of its invention to an invention in which all the process steps (namely, bypassing the first shift reactor) do not occur. But an invention that claims this comparison as novel (as the current application appears to) is not patentably distinct. Randolph includes the inherent advantages of its process.
3. In regards to the amendment filed on 3/24/10, the step of obtaining data to show something that Randolph inherently discloses does not make for patentable distinction either. Data is obtained in Randolph. This data inherently discloses all the properties associated with it. Using data from Randolph to show something that Randolph does not explicitly state, again, does not make for patentably distinct subject matter.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 9-14 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Rudolph (US 4,161,393).

8. Regarding claim 9, Rudolph discloses providing a first shift reactor **17** and a second shift reactor **22**; splitting a syngas from a gasification unit into a first portion **2** and a second portion **20** (column 3, lines 25-27), combining only the first portion with

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steam (in **10**) sufficient to support a shift reaction to form a steam-containing first portion (column 3, lines 35-42), and feeding the steam-containing first portion to the first shift reactor to form a first shift reactor effluent (column 3, lines 43-48); bypassing the second portion around the first shift reactor (see figure) and combining the first shift reactor effluent with the second portion to form a mixed feed gas (column 3, lines 49-52), and reacting the mixed feed gas in the second shift reactor to form a second shift reactor effluent (column 3, lines 52-55); wherein the second portion is combined with the first shift reactor effluent in an amount effective to reduce steam consumption in the first and second shift reactors (column 1, lines 20-25) as compared to a plant operating without the step of bypassing the second portion around the first shift reactor; and operating the first and second shift reactors at about the same temperature (column 1, lines 59-68).

Rudolph does not disclose that steam is the only source of water added to the first portion since saturator **10** is used to add water vapor to the first portion in addition to the steam added nor does Rudolph explicitly disclose the obtainment of data.

9. However, Rudolph does disclose that the saturator **10** can be omitted when the enriching of water vapor is not desired (column 4, lines 4-10). In the cited paragraph, Rudolph discloses that conduits **8** and **12** would then be directly connected. Steam input **13** remains unaffected by this change. Therefore, it is either inherent in Rudolph that the entirety of the water required for the shift-conversion comes from the steam source when the water vapor addition means is removed or it would have been obvious to one having ordinary skill in the art at the time of invention to add enough steam to the first

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portion of Rudolph to provide the necessary water for shift-conversion when there is no water vapor addition means.

10. While Rudolph does not explicitly disclose obtaining data that indicates the reduction of steam consumption and condensate formation, this acquisition of data is inherent to the invention. By bypassing the first shift reactor and using the minimum amount of steam necessary, steam consumption is reduced and condensation formation is reduced relative to a process in which these steps did not occur. Since Rudolph discloses the obtainment of data regarding the process (see Example section for gas compositions, quantities, and temperatures), the data would indicate that which is inherent to the invention.

11. Regarding claims 10 and 11, Rudolph discloses that the second portion of the syngas is combined with the first shift reactor effluent in an amount effective to reduce steam demand by at least 35% (column 2, lines 60-68).

12. Regarding claim 12, Rudolph discloses that the second portion has a volume of 50 to 91 volume percent of the syngas from the gasification unit (column 1, lines 59-62).

13. Regarding claim 13, Rudolph discloses providing a bypass **23** that combines a third portion of the syngas with the second shift reactor effluent (column 3, lines 55-57).

14. Regarding claim 14, Rudolph discloses that the syngas includes carbon monoxide and hydrogen in a molar ratio of at least 2:1 (column 4, lines 31-36).

15. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rudolph as applied to claim 9 above, and further in view of Schmid (US 4,159,236).

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16. Rudolph discloses a third shift reactor **24** that inputs the effluent of the second shift reactor for the removal of CO, but does not disclose the use of an acid removal unit. Schmid--in an invention for a gasification process—discloses a shift reactor/acid gas removal unit combination as well as an additional acid gas removal unit for the removal of CO, CO<sub>2</sub>, and H<sub>2</sub> (column 10, line 67 to column 11, line 6). It would have been obvious to one having ordinary skill in the art at the time of invention to replace the third shift reactor of Rudolph with the shift reactor/acid removal unit of Schmid or to add the acid removal unit of Schmid to Rudolph to separate out the undesirable products.

### ***Conclusion***

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to IMRAN AKRAM whose telephone number is (571)270-3241. The examiner can normally be reached on 10-7 Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/I. A./  
Examiner, Art Unit 1795

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Supervisory Patent Examiner, Art Unit 1795